

REMARKS

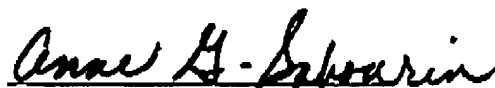
Applicants elect Example 3 which collectively exemplifies the elected species.

With respect to the restriction requirement, Applicants elect Group I, claims 1-6, 12-13, 15-21. From Claim 25-30 Applicants elect the species of a coating composition. Applicants believe that this allows examination of claims 25-30 together with Group I claims.

Claims 7-10, 14 and 22-24 are canceled without prejudice. Claim 11 was canceled by an earlier amendment.

Examination of these claims is respectfully requested.

Respectfully Submitted,

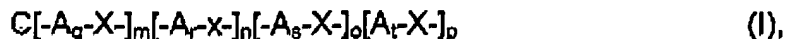


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Date: April 1, 2003
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GROUP 1700

1. (Previously Amended) A liquid composition, prepared by copolymerizing olefinically unsaturated compounds in a reaction medium of reactive diluents for thermally curable multisubstance mixtures.
Substitute for claim 2.
2. (Previously Amended) A homopolymer or copolymer of olefinically unsaturated compounds, prepared by copolymerizing the compounds in a reaction medium of reactive diluents for thermally curable multisubstance mixtures.
3. (Previously Amended) A liquid composition of claim 1 wherein compounds selected from the group consisting of polyols, epoxides and mixtures thereof are used as reactive diluents.
4. (Previously Amended) A liquid composition of claim 3, wherein the polyols used comprise
- (i) hyperbranched compounds containing a tetrafunctional central group derived from compounds selected from the group consisting of ditrimethylolpropane, diglycerol, ditrimethylolethane and mixtures thereof or a tetrafunctional central group of the general formula I



in which the indices and variables have the following definitions:

$m + n + o + p = 4$; where

m is an integer from 1 to 3, and

n , o and p are 0 or an integer from 1 to 3;

q , r , s and t are an integer from 1 to 5, where $q \geq r, s, t$,

X is $-O-$, $-S-$ or $-NH-$;

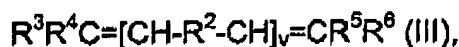
A is $-\text{CR}_2-$; where

R is selected from the group consisting of $-\text{H}$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{CN}$, $-\text{NO}_2$ C_1 - C_3 alkyl or haloalkyl or C_1 - C_3 alkoxy radical or, if q, r, s and/or t are at least 2, R is selected from the group consisting of a C_2 - C_4 alkanediyl, oxaalkanediyl radical having 2 to 5 carbon atoms, an oxygen atom $-\text{O}-$ which bridges from 3 to 5 carbon atoms of the radical $-\text{A}-$ and mixtures thereof;

(ii) cyclic and/or acyclic C_9 - C_{16} alkanes

functionalized with at least two hydroxyl groups or at least one hydroxyl group and at least one thiol group;

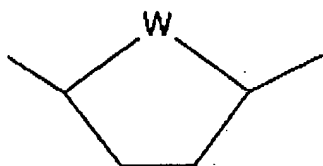
(iii) polyols obtained by hydroformylating oligomers of the formula (III),



in which R^2 is $-(\text{CH}_2)_w-$,

in which the index w is an integer from 1 to 6, or

=



in which w is $-\text{CH}_2-$ or an oxygen atom;

R^3 , R^4 , R^5 and R^6 independently of one another are hydrogen atoms or alkyl; and the index v is an integer from 1 to 15.

5. (Previously Amended) A liquid composition of claim 4, wherein the polyols (I) used comprise a hyperbranched compound obtained by reacting 2,2-bishydroxymethylbutane-1,4-diol with phthalic anhydride and then reacting

the resultant intermediate with glycidyl esters of tertiary, highly branched, saturated monocarboxylic acids,

the polyols (ii) used comprise dialkyl octanediols, and

the polyols (iii) used comprise hydroformylated and hydrogenated oligomers, obtained by metathesis from acyclic monoolefins and cyclic monoolefins, hydroformylation of the -resultant oligomers and subsequent hydrogenation, the cyclic monoolefin used comprising cyclopentene and the acyclic monoolefins used comprising hydrocarbon mixtures obtained in petroleum processing by cracking (C₅ cut), and the polyols (iii) having a hydroxyl number (OHN) of from 200 to 60, a number-average molecular weight M_n , of from 400 to 1 000, a mass-average molecular weight M_w , in the range from 600 to 2 000, and a polydispersity M_w/M_n , from 1.4 to 3.

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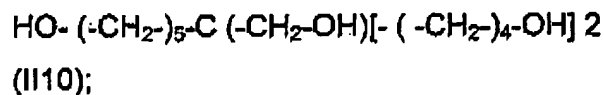
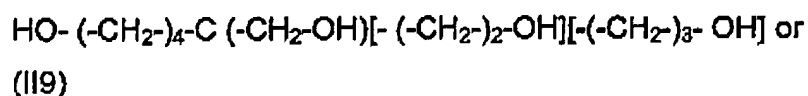
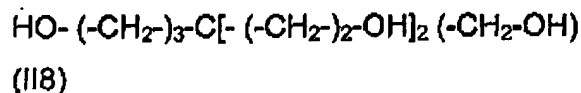
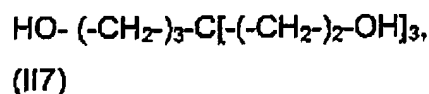
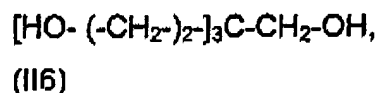
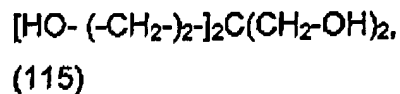
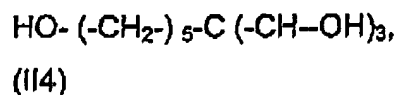
6. (Previously Amended) A liquid composition of claim 3, wherein the reactive diluents containing epoxide groups comprise

(iv) glycidyl ethers of polyols or polyphenols such as glycerol, diglycerol, glucitol, erythritol, pentaerythritol, dipentaerythritol, trimethylolpropane, trimethylolethane, ditrimethylolpropane, ditrimethylolethane, tetrakis(2-hydroxyethyl)ethane, tetrakis(3-hydroxypropyl)methane, the tetraols II1 to II10:

HO-(-CH₂)₂-C(-CH₂-OH)₃,
(II1)

HO-(-CH₂)₃-C(-CH₂-OH)₃,
(II2)

HO-(-CH₂)₄-C(-CH₂-OH)₃,
(II3)



the polyols (i), (ii) and (iii), pyrocatechol, resorcinol, hydroquinone, pyrogallol, phloroglucinol, (p-hydroxy-phenyl)phloroglucinol, 5-(7-hydroxynaphth-1-yl)pyrogallol, bisphenol F, bisphenol A or novolaks;

(v) low molecular mass epoxy resins or oligomers which contain glycidyl-containing monomers (A6) in copolymerized form;

(vi) glycidyl esters of Versatic® acid;

(vii) epoxy resin esters of saturated and unsaturated fatty acids;

and

(viii) epoxidized triglycerides of natural oils and esters, and mixtures thereof.

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7. (Canceled) A liquid composition prepared by homopolymerization or copolymerization of olefinically unsaturated monomers in a Taylor reactor having an external reactor wall located within which there is a concentrically or eccentrically disposed rotor, a reactor floor and a reactor lid, which together define the annular reactor volume, at least one means for metered addition of reactants, and a means for the discharge of product, where the reactor wall and/or the rotor are or is geometrically designed in such a way that the conditions for Taylor vortex flow are met over substantially the entire reactor length in the reactor volume, in such a way that the annular gap broadens in the direction of flow traversal.

8. (Canceled) A process for preparing a liquid composition by free-radical copolymerization in a liquid reaction medium, which comprises using, as the reaction medium, reactive diluents for thermally curable multisubstance mixtures.

9. (Canceled) The process as claimed in claim 8, wherein a fraction of the reactive diluents is modified after the copolymerization with olefinically unsaturated compounds, so that the resulting liquid composition is curable by means selected from thermal, actinic light, and electron beams, and mixtures thereof.

10. (Canceled) The process as claimed in claim 8, conducted in a Taylor reactor having an external reactor wall located within which there is a concentrically or eccentrically disposed rotor, a reactor floor and a reactor lid, which together define the annular reactor volume, at least one means for

metered addition of reactants, and a means for the discharge of product, where the reactor wall and/or the rotor are or is geometrically designed in such a way that the conditions for Taylor vortex flow are met over substantially the entire reactor length in the reactor volume, i.e. in such a way that the annular gap broadens in the direction of flow traversal.

11. (Previously Canceled) The use of a liquid composition as claimed in any of claims 1 and 3 to 7, of a homopolymer as claimed in any of claims 2 to 7 or of an aliquid composition or homopolymer or copolymer prepared as claimed in any of claims 8 to 10 to prepare coating compositions, adhesives, or sealing compounds curable thermally or curable thermally and with actinic light and/or electron beams.

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12. (Previously Added) A liquid composition of claim 4, wherein A. the polyols (iii) have a hydroxyl number (OHN) of from 250 to 450, a number-average molecular weight M_n , of from 400 to 600, a mass-average molecular weight M_w , in the range from 600 to 1100, and a polydispersity M_w/M_n , from 1.7 to 1.9.

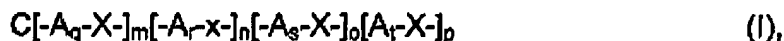
13. (Previously Added) A liquid composition of claim 4 wherein the polyols (ii) comprise diethyl- octanediols.

14. (Canceled) The process as claimed in claim 8, wherein a fraction of the reactive diluents is modified after the copolymerization with monomers selected from the group consisting of (A2), (A5) and/or (A6) and mixtures thereof, so that the resulting liquid composition is curable by means selected from thermal, actinic light, and electron beam, and mixtures thereof.

15. (Previously Added) A homopolymer or copolymer as claimed in claim 2, wherein compounds selected from the group consisting of polyols, epoxides and mixtures thereof are used as reactive diluents.

16. (Previously Added) A homopolymer or copolymer as claimed in claim 15, wherein the polyols used comprise

- (ii) hyperbranched compounds containing a tetrafunctional central group derived from compounds selected from the group consisting of ditrimethylolpropane, diglycerol, ditrimethylolethane and mixtures thereof, and a tetrafunctional central group of the general formula I



in which the indices and variables have the following definitions:

$m + n + o + p = 4$; where

m is an integer from 1 to 3, and

n , o and p are 0 or an integer from 1 to 3;

q , r , s and t are an integer from 1 to 5, where $q > r, s, t$;

X is -O-, -S- or -NH-;

A is $-CR_2-$; where

R is selected from the group consisting of -H, -F, -Cl, -Br, -CN, -NO₂, C₁-C₃ alkyl or haloalkyl or C₁-C₃ alkoxy radical or, if q , r , s and/or t are at least 2, R is a C₂-C₄ is selected from the group consisting of alkanediyl and oxaalkanediyl radicals having 2 to 5 carbon atoms and an oxygen atom -O- which bridges from 3 to 5 carbon atoms of the radical -A-;

- (ii) cyclic and/or acyclic C₆-C₁₆ alkanes

functionalized with at least two hydroxyl groups or at least one hydroxyl group and at least one thiol group;

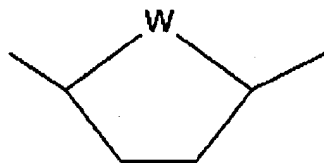
(iii) polyols obtained by hydroformylating oligomers of the formula (III),



in which R^2 is $-(CH_2)_w-$,

in which the index w is an integer from 1 to 6, or

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in which w is $-CH_2-$ or an oxygen atom;

R^3 , R^4 , R^5 and R^6 independently of one another are hydrogen atoms or alkyl; and the index v is an integer from 1 to 15.

17. (Previously Added) A homopolymer or copolymer of claim 16, wherein

the polyols (i) used comprise

a hyperbranched compounds obtained by reacting 2,2-bishydroxymethylbutane-1,4-diol with phthalic anhydride and then reacting the resultant intermediate with glycidyl esters of tertiary, highly branched, saturated monocarboxylic acids,

the polyols (ii) used comprise dialkyloctanediols, and

the polyols (iii) used comprise hydroformylated and hydrogenated oligomers, obtained by metathesis from acyclic monoolefins and cyclic

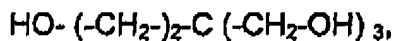
monoolefins, hydroformylation of the -resultant oligomers and subsequent hydrogenation, the cyclic monoolefin used comprising cyclopentene and the acyclic monoolefins used comprising hydrocarbon mixtures obtained in petroleum processing by cracking (C_8 cut), and the polyols (iii) having a hydroxyl number (OHN) of from 200 to 60, a number-average molecular weight M_n , of from 400 to 1 000, a mass-average molecular weight M_w , in the range from 600 to 2 000, and a polydispersity M_w/M_n , from 1.4 to 3.

18. (Previously Added) A homopolymer or copolymer of claim 15, wherein A. the polyols (iii) have a hydroxyl number (OHN) of from 250 to 450, a number-average molecular weight M_n , of from 400 to 600, a mass-average molecular weight M_w , in the range from 600 to 1100, and a polydispersity M_w/M_n , from 1.7 to 1.9.

19. (Previously Added) A homopolymer or copolymer of claim 15, wherein the polyols (ii) comprise diethyl-octanediols.

20. (Previously Added) A homopolymer or copolymer of claim 15, wherein the reactive diluents containing epoxide groups comprise

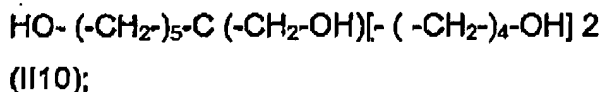
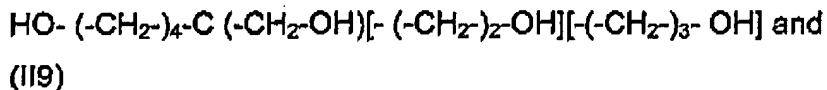
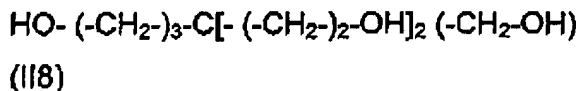
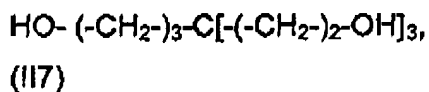
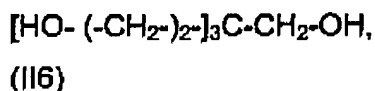
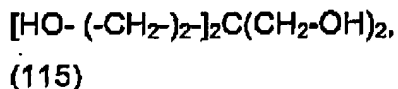
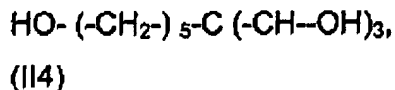
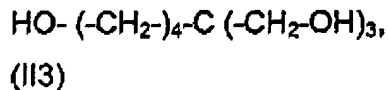
(iv) glycidyl ethers of polyols or polyphenols such as glycerol, diglycerol, glucitol, erythritol, pentaerythritol, dipentaerythritol, trimethylolpropane, trimethylolethane, ditrimethylolpropane, ditrimethylolethane, tetrakis(2-hydroxyethyl)ethane, tetrakis(3-hydroxypropyl)methane, the tetraols II1 to II10:



(II1)



(II2)



the polyols (i), (ii) and (iii), pyrocatechol, resorcinol, hydroquinone, pyrogallol, phloroglucinol, (p-hydroxy-phenyl)phloroglucinol, 5-(7-hydroxynaphth-1-yl)pyrogallol, bisphenol F, bisphenol A or novolaks;

- (v) low molecular mass epoxy resins or oligomers which contain glycidyl-containing monomers (A6) in copolymerized form;

(vi) glycidyl esters of Versatic® acid;

(vii) epoxy resin esters of saturated and unsaturated fatty acids;

and

(viii) epoxidized triglycerides of natural oils and esters, and mixtures thereof.

21. (New) A homopolymer or copolymer of claim 2 prepared by homopolymerization or copolymerization of olefinically unsaturated monomers in a Taylor reactor having an external reactor wall located within which there is a concentrically or eccentrically disposed rotor, a reactor floor and a reactor lid, which together define the annular reactor volume, at least one means for metered addition of reactants, and a means for the discharge of product, where the reactor wall and/or the rotor are or is geometrically designed in such a way that the conditions for Taylor vortex flow are met over substantially the entire reactor length in the reactor volume, in such a way that the annular gap broadens in the direction of flow traversal.

22. (Canceled) A process for preparing a homopolymer or copolymer of olefinically unsaturated compounds by free-radical copolymerization in a liquid reaction medium, which comprises using as a reaction medium, reactive diluents for thermally curable multisubstance mixtures.

23. (Canceled) The process as claimed in claim 22, wherein a fraction of the reactive diluents is modified after the copolymerization with olefinically unsaturated compounds, so that the resulting composition is curable by means selected from thermal, actinic light, electron beams and mixtures thereof.

24. (Canceled) The process as claimed in claim 22, wherein a fraction of the reactive diluents is modified after the copolymerization with olefinically

unsaturated compounds selected from the group consisting of monomers (A2), (A5) and (A6) and mixtures thereof, and the resulting composition is cured by means selected from thermal, actinic light, electron beams and mixtures thereof.

25. (Previously Added) A coating composition comprising the liquid composition of claim 1, cured by means selected from thermal, actinic light, electron beam and mixtures thereof.

26. (Previously Added) An adhesive comprising the liquid composition of claim 1 cured by means selected from thermal, actinic light, electron beam and mixtures thereof..

27. (Previously Added) A composition selected from the group consisting of coating compositions, sealants, and adhesives, comprising the liquid composition of claim 1 cured by means selected from thermal, actinic light, electron beam and mixtures thereof.

28. (Previously Added) A composition selected from the group consisting of coating compositions, sealants and adhesives, comprising the homopolymer or copolymer of claim 2 cured by means selected from thermal, actinic light, electron beam and mixtures thereof.

29. (Previously Added) A composition selected from the group consisting of coating compositions, sealants and adhesives, comprising the liquid composition prepared by the method of claim 8, cured by means selected from thermal, actinic light, electron beam and mixtures thereof.

30. (Previously Added) A composition selected from the group consisting of coating compositions, sealants and adhesives comprising the homopolymer or copolymer prepared by the method of claim 21, cured by means selected from thermal, actinic light, electron beam and mixtures thereof.

PATENT

(Practitioner's Docket No. IN-5484)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Heinz-Peter RINK
Werner Alfons JUNG

Serial No.: 09/830,694.

Filed: April 1, 2003

Group Art Unit: 1713

Examiner: T. Zalukaeva

For: POWDER CLEARCOAT MATERIAL AND AQUEOUS POWDER CLEARCOAT
SLURRYCommissioner of Patents
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☒ RESPONSE TO RESTRICTION REQUIREMENT

Total pages 16

CONDITIONAL PETITION FOR EXTENSION OF TIME

Applicants believe that no extension of time is required. However, this conditional
petition is being made to provide for the possibility that applicants have inadvertently
overlooked the need for a petition for extension of time. In this event, please charge
Deposit Account 23-3425 the necessary extension of time fees. This document is
submitted in duplicate.

Tuesday, April 01, 2003

Date

Marjorie Ellis

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Signature of person mailing paper or fee